CONSULTING ENGINEERS

STRUCTURAL REPORT - PLANNING

BARN AT MEADOWSIDE, TRESMERE,

DOCUMENT No. AO246-W-0001-A

CLIENT: MRS R.M DANIEL

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Revision	Date	Notes	Prepared	Checked
A	18/ 05/ 23	For information	AM O	AM O

1.0 Introduction

X-Consulting Engineers Ltd were appointed to undertake a structural inspection on the building highlighted below. This report is for planning purposes to comment on the suitability of the building for conversion.

Above: Barn A (highlighted within red box)

A hand sketch of the structural arrangement is provided at the rear of this report.

2.0 Exclusions and limitations

This is an appraisal report for suitability for conversion for planning purposes and does not provide construction status information. We have only provided comment on structural items available for visual inspection at the time of survey. This report has been produced for the benefit of the named Client and is not for distribution or use by any other party. We have only commented on structural items.

3.0 The Existing Structure

3.1 The structure

The barn is accessed via a public highway and gate to the West of the barn.

Above: Barn viewed from South West Elevation

The barn is split into two structural forms a lean too section (to the North) and duo pitched section to the South. The barn is rectangular on plan measuring approximately 14m x 12.1m.

The lean too section low eaves measures 3.38m above ground floor level and spans 6.3m. The duo pitched area has a clear span of 5.8m with the eaves and apex measuring 4.25m and 5.6m respectively.

Vertical loads in the duo pitched area are transferred via pre cast concrete purlins onto the pre cast concrete frames and onto the foundations below. Lateral stability is provided by moment connections at the eaves of the frames and assumed base fixity.

Above: Pre cast concrete portal frames

Above: Typical moment connection at the eaves of the pre cast concrete frames

Vertical loads in the lean too section are transferred via timber purlins supported on principal timber rafters. These principal timber rafters are supported by timber posts and the pre cast frames of the duo pitched section. Lateral stability is provided by connection to the portal frames and assumed base fixity.

3.2 Roof / frame

The roof of the lean too section is clad in metal corrugated sheeting. This sheeting requires localised repairs but is in good condition. The repairs are localised and expected as part of the routine maintenance associated with a building of this nature.

Above: Metal corrugated roof cladding, lean too roof

The roof of the concrete framed section is clad in a cement based corrugated sheeting. This sheeting is in good condition and can remain as part of the converted scheme.

Above: Roof cladding to concrete framed section

The timber purlins and principal timber rafters of the lean too section are in good condition. The principal rafters bear directly on timber posts and have a cleated connection to the pre cast concrete frames.

Above: Cleated connection support to principal timber rafter

These cleated connections require wire brushing down and a suitable paint application applied but are suitable to remain as part of the converted scheme. The principal rafters appear adequately sized to support a typical converted roof and the timber posts (200mm diameter) are adequate to support the associated increase in vertical loads.

Above: Timber post with direct bearing over to principal timber rafter

The primary structural frame to the duo pitched area consists of 4no. pre cast concrete frames. Typically frames of this nature show signs of spalling at the column bases when they in need of maintenance works. The bases were inspected and no evidence of spalling was noted. The frames are in good condition and can remain as the part of the converted scheme.

The secondary structural elements for the concrete frames consist of pre cast concrete purlins supporting the roof cladding and pre cast concrete side rails supporting the wall cladding. The purlins and side rails are in good.

The frames are braced at the eaves by pre cast beams forming the gutter and eaves beams. Some evidence of minor concrete spalling was noted, however this can be treated with a simple cleaning of the reinforcement and grout repair.

Above: Spalling to underside of gutter / eaves beam

3.3 Walls

The structure is clad in a metal profiled sheeting. This metal sheeting is generally in good condition however some localised repairs are needed. This could be achieved by replacement panels or over cladding areas.

3.3 Ground Floor

The ground floor of the barn has a partial concrete slab. Subject to further testing this slab can remain in place and a new slab cast adjacent to form the ground floor.

4.0 Conclusions and Recommendations

- The barn consists of a timber lean too section and pre cast concrete framed duo pitched section.

- The roof is clad in metal corrugated sheeting (lean too) and a cement based corrugated sheeting (pre cast concrete section). The roof cladding is in good condition.

- The timbers of the lean too section are in good condition. Principal rafters and timber columns appear adequately sized to remain and provide support to the converted scheme.

- The concrete portal frames including secondary elements (purlins, side rails) are in good condition and can remain as part of the converted scheme.

- The ground floor has a partial concrete slab. This will need to be extended as part of the conversion.

- No elements of the structural frame were found to require replacement.

It is therefore our recommendation that the existing structure is capable of conversion to a domestic application.

Report produced on behalf of XCE

Andrew Oliver – Director

MEng (Hons), MIStructE, Chartered Structural Engineer

XCE

CONSULTING ENGINEERS

CALCULATION SHEET

Project:	BARN AT. PLUS SQU.	Job No.:	
Section:	GROUND FLOOR STRUCTURE/ROOF	Sheet No/Rev.	
Calcs By:	AMO.	Checked By:	Date: 16/05/23.

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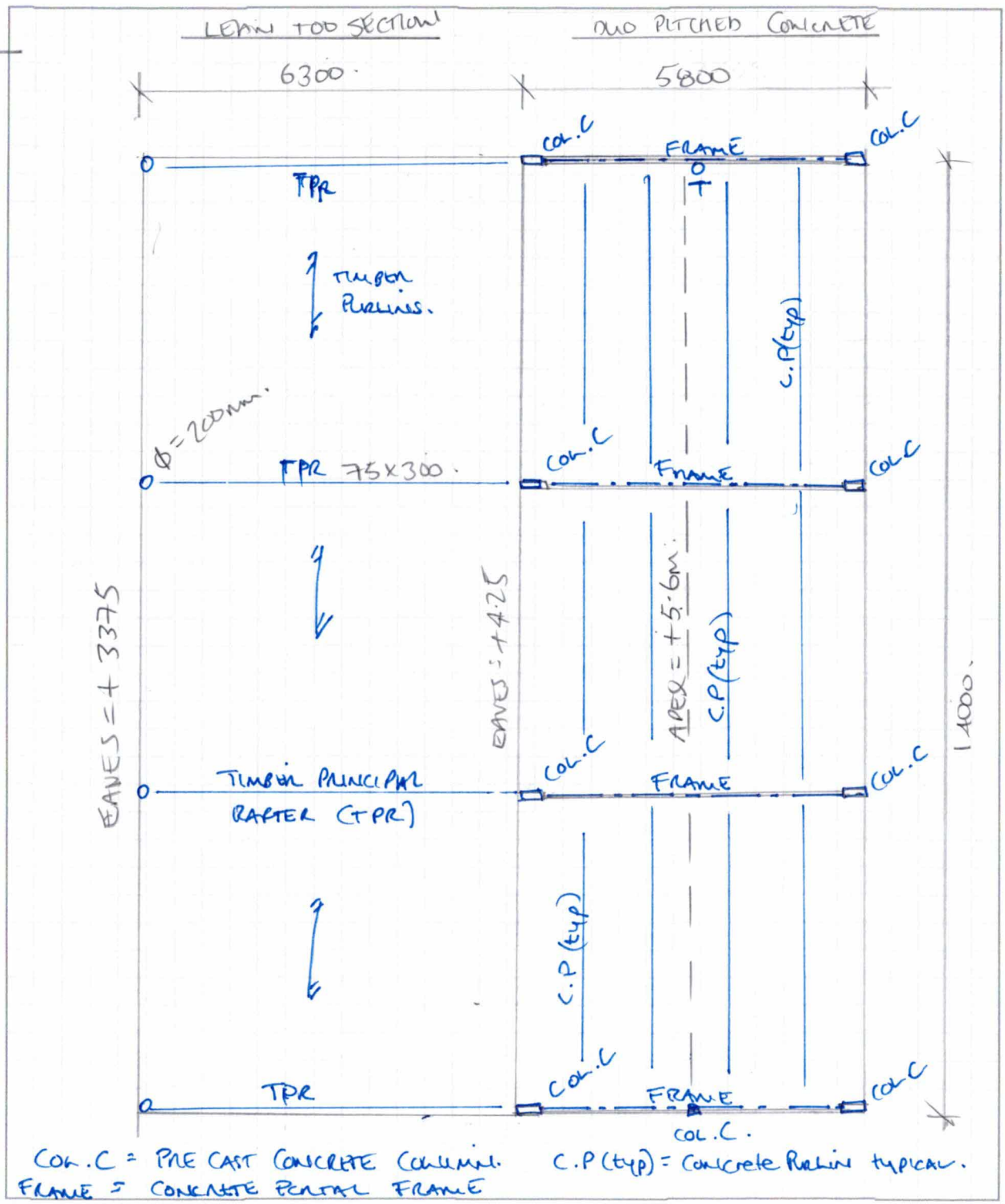

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